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NOBUYUKI KAMBE

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EXAMINER

GUHARAY, KARABI

ART UNIT

PAPER NUMBER

2879

DATE MAILED: 01/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

08/962,362

Applicant(s)

KAMBE ET AL.

Examiner

Karabi Guharay

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on Appeal brief, filed on 10/26/2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6,20-30 and 32-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 32 and 33 is/are allowed.
- 6) ☒ Claim(s) 1-6,20-30 & 34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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Appeal brief, filed on 10/26/2005 has been considered and entered.

Upon reconsidering the arguments presented in appeal brief, finality of the last office action has been withdrawn and prosecution of the application is reopened.

Amendment, filed on 8/24/2005 has been entered.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-6, 20-30 & 34, are rejected under 35 U.S.C. 103(a) as being unpatentable over Jaskie (US 5442254) further in view of Bhargava (US 5455489).

Referring to claims 1, 4, and 5, Jaskie discloses a display (see FIG. 5) comprising phosphor particles (fluorescent layer 53) having an average diameter less than 95 nm (see abstract, 10 nm particles) wherein the particle size is selected to yield light in a desirable portion of the spectrum. Jaskie is silent as to the particular range of phosphor particles. Jaskie teaches, however, that the specification of a desired particle range is within the skill of the art. See col. 7, lines 34-40. It would have been obvious to specify a desired particle range because the specification of a desired particle range is generally recognized to be within the skill of the art. Furthermore Jaskie does not exemplify that phosphor particle comprises metal oxide. However, Bhargava teaches

that metal oxide particles such as ZnO (group II-VI, semiconductor), ZnS, and  $Y_2O_3$  (see col. 2, lines 4-32), are all suitable for quantum contained phosphors, such as desired by Jaskie. It would have been obvious to select ZnO, ZnS, and  $Y_2O_3$ , phosphors as disclosed by Bhargava, in the display, as disclosed by Jaskie, because the selection of known materials for a known purpose is within the skill of the art.

Still referring to claims 1, 4, and 5, substituting an average diameter of 5 nm as recited in claim 4, into the narrower range of particle sizes as recited in claim 5, yields a range of particle sizes of from 3 to 7 nm. Now referring to column 6, lines 46-49, Jaskie teaches that yellow light is produced from particles having a size of approximately 5 nm. Jaskie further teaches that the energy of a photon is inversely proportional to wavelength (col. 1, line 52-55), and inversely proportional to the size of the phosphor particle (col. 4, line 40-44). Taking yellow light to be the band from 597 to 577 nm and using the equations provided in column 1, line 52-55, and column 4, line 40-44 yields the yellow phosphor having the size from 5.04 to 4.95 nm, i.e., approximately 5 nm, as disclosed by Jaskie. Similarly, substituting the wavelength range of visible light from 400 to 800 nm, yield a particle distribution of from 4.14 to 5.84 nm, which is within the claimed range from 3 to 7 nm. Consequently, it is the position of the examiner that it would have been obvious to one skilled in the art that the presently claimed range of sizes reads on the teachings of Jaskie.

Referring to claim 6, Jaskie teaches that the light emission follows low velocity electron excitation.

Referring to claims 2, 3, the selection of known materials for a known purpose is generally considered to be within the skill of the art. Bhargava teaches that ZnO (group II-VI, semiconductor), ZnS, and  $Y_2O_3$  (see col. 2, lines 4-32), are all suitable for

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quantum contained phosphors, such as desired by Jaskie. It would have been obvious to select ZnO, ZnS, and Y<sub>2</sub>O<sub>3</sub>, phosphors as disclosed by Bhargava, in the display, as disclosed by Jaskie, because the selection of known materials for a known purpose is within the skill of the art.

Referring to claims 20, and 21, FED displays conventionally include a plurality of phosphors for generating red, blue, green light (see for example, US 5,225,820 to Clerc, FIG. 6, RGB phosphors 28), and anodes 26 made of transparent ITO (lines 21-22 of column 5 of Clerc).

Referring to claims 22, 23, Jackie discloses a liquid crystal display; see col. 1, line 26; and a partially transparent faceplate (52 of Fig 5).

Claim 24, and 27 are rejected for the same reason as claim 21.

Referring to claim 25, Jackie teaches a focus grid (focus grid 59 of Fig 4).

Claim 28 is rejected for the same reason as claims 20, 21.

Referring to claims 29 & 34, Jackie teaches that the phosphor particles are roughly spherical (see FIG. 2, and col. 6, line 48).

Claim 30 is rejected for the same reason as claim 6.

Referring to claim 26, Jaskie does not disclose an EL display. Bhargava teaches that quantum confined phosphors provide EL displays (see FIG. 15) with higher efficiency (see col. 9, lines 46-67). It would have been obvious to include the quantum-confined phosphors, as disclosed by Jaskie, in the EL display, as disclosed by Bhargava, for higher efficiency.

***Allowable Subject Matter***

Claims 32-33 are allowed over the prior art of record.

The following is a statement of reasons for the indication of allowable subject matter:

Applicant's arguments presented for claims 32-33 are found to be persuasive.

Further prior art of record neither shows nor suggests a display device comprising all the limitations set forth in claim 32, particularly having average diameter from 15nm to 100nm together with the claimed diameter distribution.

### ***Response to Arguments***

Applicant's arguments presented in appeal brief, regarding claims 32-33 are have been fully considered and are persuasive. The rejection of claims 32-33 has been withdrawn.

Regarding rejection of claims 1-6 and 20-30 under 35 USC 103(a), examiner points out that after the decision of previous appeal, applicant amends claim 1, where instead of "average diameter less than 100nm" amended claim recites "average diameter less than 95nm" which does not effect the rejection of claims presented to the board of Patent Appeals and Interferences and further doesn't address the issue of arguments.

Further Applicant contends on error of law and error of fact made by the board of patent appeals and Interferences in rendering decision of March 18, 2003".

However, Applicant is respectfully reminded that the patent examiner is bound by the decisions of the board of Patent appeals. If applicant disagrees with the decision of Board of Appeal then the avenue for remedy is with Federal circuit not with examiner (see MPEP 1216).

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However, examiner wants to point out that such amendment of claim 1 does not overcome the rejection of claims 1-6 & 20-30 as presented before. Examiner further points out that response to applicant's arguments are same as presented before.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karabi Guharay whose telephone number is (571) 272-2452. The examiner can normally be reached on Monday-Friday 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (571) 272-2457. The fax phone number for the organization is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Karabi Guharay*  
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Patent Examiner  
Art Unit 2879